



INSTALLATION RESTORATION PROGRAM

August 2000



Proposed Plan for Site/SWMU 2 and Site/SWMU 15

No Action/No Further Action

Marine Corps Recruit Depot

Parris Island, South Carolina

Introduction

This document presents the Proposed Plan for Site/Solid Waste Management Unit (SWMU) 2 and Site/SWMU 15 at the Marine Corps Recruit Depot (MCRD) Parris Island, South Carolina. (For the remainder of this document, these sites/SWMUs will be referred to as Site 2 and Site 15.) The Proposed Plan is No Action/No Further Action because conditions at both sites are protective of human health and the environment. The Proposed Plan was developed by the MCRD Parris Island Partnering Team, which includes representatives from the Department of the Navy (Navy), Marine Corps, United States Environmental Protection Agency (U.S. EPA), and South Carolina Department of Health and Environmental Control (SCDHEC).

This document was developed in accordance with Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and applicable provisions of the National Oil and Hazardous Substance Pollution Contingency Plan (NCP) [40 CFR 300.430(f)(2)]. This Plan highlights key information from the RCRA Facility Investigation/Remedial Investigation (RFI/RI) conducted at Sites 2 and 15, but is not a substitute for this document. More detailed information is located at the information repository for Sites 2 and 15 in the Administrative Record File. Following the issuance of this document, the public is invited to review the Administrative Record File and comment on the Proposed Plan. As the lead agency, the Navy is required to publish the Proposed Plan to fulfill the public participation requirements of CERCLA and the NCP. The Partnering Team, in consultation with the local community, will select a final remedy for Sites 2 and 15 after all public comments have been addressed. Please note that the finalization of this Proposed Plan is dependent on any and new information that may become available during the public comment period.

As the lead agency, the Navy is accepting formal public comments on the Proposed Plan from August 11, 2000 to September 25, 2000. You don't have to be a technical expert to comment. If you have a concern or preference, the Partnering Team wants to hear it before making a final decision. To comment formally, offer oral comments during the comment portion of the public meeting (see page 7 for details). Or send written comments, postmarked no later than September 25, 2000, to

Commanding General
Marine Corps Recruit Depot
Attn: Timothy J. Harrington, NREAO
P.O. Box 19003
Parris Island, SC 29905-9003
Tel: 843-228-3423
E-mail comments by September 25, 2000 to
email: harringtonj@mcrdpi.usmc.mil

Facility Description

MCRD Parris Island, South Carolina (see Figure 1) is the reception and recruit training facility for the Marine Corps for enlisted men from states east of the Mississippi River and for enlisted women nationwide. The Depot is located along the southern coast of South Carolina, within Beaufort County, approximately 1 mile south of the City of Port Royal and 3 miles south of the City of Beaufort, and occupies an area of approximately 8,047 acres. MCRD Parris Island was added to the U.S. EPA's National Priorities List (NPL) in 1994.

Site Description and History

Site 2 – Borrow Pit Landfill

Site 2, the Borrow Pit Landfill, was reportedly in operation from 1966 to 1968. It is located in the central portion of Horse Island, in the northern section of MCRD Parris Island, as shown in Figure 2. The site occupies

In accordance with CERCLA Section 117, this document summarizes the Proposed Plan for Sites 2 and 15 at MCRD Parris Island. For more detailed information, please consult the Administrative Record File located in the information repository at the Beaufort County Public Library Headquarters (311 Scott Street, Beaufort, South Carolina 29902).

approximately 1.9 acres and is currently covered with mature pine trees.

From 1966 to 1968, the area reportedly served as the disposal site for domestic trash, construction debris, solid paint wastes, cleaning rags, spent absorbent, solvent sludge, tetrachloroethene (PCE) spill bottoms, metal shavings, polychlorinated-biphenyl (PCB)-contaminated oil, mercury amalgam, and beryllium wastes from the MCRD. Aerial photographs show this area to be active during this approximate time period. An estimated 33,000 tons of solid waste refuse and 16 tons of solid paint wastes were reportedly disposed of in this landfill during the period of operation. Most of the wastes were located in the central and eastern portions of Site 2. In addition, approximately 2,800 gallons of liquid paint wastes may have been burned annually at the landfill during the period of operation. When landfill operations were terminated, the pit was believed to be approximately half-filled with wastes and approximately 6 feet deep. Since 1968, no documented disposal or intrusive activities have taken place at Site 2. Note that during the remedial investigation in 1998 no evidence of waste was found. If waste had been placed in Site 2, it may have removed to help complete the nearby causeway (Site 3).

Previous investigations at Site 2 have included an Initial Assessment Study (IAS) in 1986, a Verification Step (VS) in 1988, an Interim RCRA Facility Assessment (RFA) in 1990, and a combined RFI/RI in 1998-1999.

Site 15 – Dirt Roads

Site 15 consists of approximately 0.5 miles of dirt road accessing the Borrow Pit Landfill (Site 2) and 1.5 miles of dirt road accessing Elliot's Beach. Figures 2 and 3 identify the locations of these roads. In the past, the MCRD routinely sprayed the Depot's roads with oils to reduce dust. From about 1918 until 1966, waste lubricating oil, cutting oil, petroleum-based solvents (kerosene, gasoline, mineral spirits), hydraulic fluids, and water-based coolants were used for dust suppression. From 1918 to 1940, an estimated 11,000 gallons were sprayed on Depot roads, the majority of which was applied during the 1930s. Most of the Depot roads were paved in the 1940s. However, from the early 1940s to 1966, approximately 16,200 gallons of waste oils and hydraulic fluids continued to be applied to the dirt roads accessing Elliot's Beach and the Borrow Pit Landfill. Most of the dirt road accessing Elliot's Beach was recently paved and only 0.25 miles of dirt road remain.

Previous investigations at Site 15 have included an IAS in 1986, an Interim RFA in 1990, a Relative Risk Evaluation in 1995, and a combined RFI/RI in 1998-1999.

Scope and Role of the Proposed Action

There are approximately 46 sites at MCRD Parris Island that are being investigated under the Installation Restoration (IR) program. This Proposed Plan addresses Sites 2 and 15; the remaining 44 sites will be addressed under separate Proposed Plans.

The results of the RFI/RI, the human health risk assessment, and the ecological risk assessment indicate that conditions at Sites 2 and 15 are protective of human health and the environment. As a result, no further investigation or remedial action is required.

The role of a Proposed Plan is to present the Preferred Alternative for a site to the public. The Proposed Plan briefly summarizes the alternatives studied, highlighting the key factors that led to the selection of the Preferred Alternative.

Summary of Site Risks

During the RFI/RI, potential environmental risks associated with this site were evaluated for human health and ecological receptors in accordance with U.S. EPA guidelines. The risk assessments considered the current land use at Sites 2 and 15, which is industrial, and the future land use, which is unrestricted. Similarly, site groundwater is not currently used as a potable water supply; however, the Navy intends for future groundwater use to be likewise unrestricted. The risk estimates were based on receptor (e.g., human, eagle, raccoon), duration of exposure (e.g., 1 day per week), pathway (e.g., ingestion of fish or soils), ingestion rates (pounds per day), and representative concentration of contaminants. The estimated risks were then compared to established criteria for evaluation.

At Sites 2 and 15, all risks are considered to be within acceptable limits. As a result, the site conditions are protective of human health and the environment and do not warrant further investigation or remedial action. The results of the human health and ecological risk assessments are summarized below.

Human Health Risk Assessment

During the human health risk assessment, maximum detected concentrations at Sites 2 and 15 were

compared to risk-based and health-based screening criteria. If the maximum concentration exceeded any one of the screening criteria, that chemical was retained as a chemical of potential concern (COPC). The risk assessment then evaluated potential exposure pathways including air, direct contact with soil and sediment, direct contact with groundwater, direct contact with surface water, and ingestion of fish. Potential receptors included construction workers, maintenance workers, adolescent and adult recreational users, and hypothetical future on-site residents. Recreational users are individuals who fish or wade within the waters adjacent to Site 2.

Risk estimates were developed in the human health risk assessment and are divided into carcinogenic and noncarcinogenic concerns. For carcinogenic risks, a range of 1 in 10,000 (1.6E-04) to 1 in 1,000,000 (1.0E-06) incremental lifetime cancer risk (ILCR) is considered to be acceptable by the U.S. EPA. For noncarcinogenic concerns, the U.S. EPA threshold value hazard index (HI) is 1.0.

Site 2

At Site 2, chloroform, arsenic, iron, and manganese were identified as groundwater COPCs. In surface water, bis(2-ethylhexyl) phthalate and arsenic were identified as COPCs. In fish tissue, benzo(a)pyrene, benzo(b)fluoranthene, and hexavalent chromium were identified as COPCs. No COPCs were identified for surface soil, subsurface soil, or sediment at Site 2. Using the identified COPCs, cancer risks and noncarcinogenic hazard indices were calculated for construction workers, adolescent recreational users, adult recreational users, and hypothetical future on-site residents. Maintenance workers exposed to surface soil and sediment were also identified as a potential receptor group at Site 2, but because no COPCs were identified for these media, no potential exposures were evaluated for maintenance workers. Table 1 (refer to page 4) presents the cancer risks and hazard indices calculated for Site 2.

As shown in Table 1, all cancer risks were within the U.S. EPA's acceptable range of 1.0E-04 to 1.0E-06. All hazard indices were below the acceptable level of 1.0 with the exception of iron. However, the iron hazard index is based on nutritional requirements and not on toxicity, and therefore do not warrant further investigation or remediation.

Site 15

The RFI/RI included surface soil and sediment sampling at Site 15. Based on the analytical results, no COPCs were identified at Site 15. The environmental conditions are protective of human health and do not warrant further investigation or remedial action.

Surface Soil: Two surface soil samples were collected in 1996 and seven surface soil samples were collected in 1998. Lead was the only chemical detected in surface soil in 1998. However, the maximum detected concentration of lead was below the risk-based screening levels, and it was not retained as a COPC.

The source of potential contamination at Site 15 is the waste oils that were sprayed on the road, which may have contained PCBs. The PCB Aroclor-1254 was detected in one of two soil samples collected in 1996. However, the detected concentration of Aroclor-1254 was less than the screening criteria. Since PCBs were not detected in surface soil samples collected in 1998, the detection limits for PCBs were compared to the screening criteria. The reported detection limits for PCBs were below the screening criteria.

Sediment: Three sediment samples were collected at Site 15 and analyzed for semivolatile organic compounds (SVOCs), pesticides/PCBs, and inorganics. The concentrations of all compounds were below the risk-based COPC screening levels with the exception of aluminum, arsenic, and iron. However, the maximum detected concentrations of aluminum, arsenic, and iron were less than their respective background concentrations. Consequently, aluminum, arsenic, and iron were not retained as COPCs.

Since PCBs were not detected in sediment, the detection limits for PCBs were compared to the screening criteria. The reported detection limits for PCBs were below the screening criteria.

Ecological Risk Assessment

For ecological receptors, potential impacts were considered for benthic macro invertebrates (e.g., aquatic worms), aquatic receptors (e.g., fish, heron, eagle), and terrestrial receptors (e.g., shrew, robin). To evaluate the data, a range of screening criteria is available, from very conservative to site-specific conditions. The initial screening criteria are based on the U.S. EPA Region 4's ecological screening values for soil and sediment. These values are considered to be protective of all species, including benthic macro invertebrates. These values are established at very low levels, and background concentrations (natural or anthropogenic) are commonly higher. Chemicals that are present at levels below these screening values do not normally require additional evaluation.

Based on the initial screening, volatile organic compounds (VOCs) and metals were retained as COPCs for all media evaluated at Site 2. SVOCs were retained as COPCs in surface water and groundwater and one

TABLE 1
SUMMARY OF CANCER RISKS AND HAZARD INDICES
SITE 2 - BORROW PIT LANDFILL
MCRD PARRIS ISLAND, SOUTH CAROLINA

Receptor	Media	Exposure Route	Cancer Risk	Chemicals with Cancer Risks >10 ⁻⁴	Chemicals with Cancer Risks >10 ⁻⁵	Chemicals with Cancer Risks >10 ⁻⁶	Hazard Index	Chemicals with HI > 1
Construction Worker	Groundwater	Dermal Contact	1.7E-08	--	--	--	0.09	--
		Surface Water	Ingestion	1.2E-08	--	--	--	0.003
	Surface Water	Dermal Contact	1.8E-06	--	--	Bis(2-Ethylhexyl)phthalate	0.45	--
		Total	1.8E-06	--	--	Bis(2-Ethylhexyl)phthalate	0.45	--
		Total All Media	1.8E-06	--	--		0.54	--
Adolescent Recreational User	Surface Water	Ingestion	1.1E-08	--	--	--	0.0002	--
		Dermal Contact	4.4E-06	--	--	Bis(2-Ethylhexyl)phthalate	0.11	--
		Total	4.6E-06	--	--	Bis(2-Ethylhexyl)phthalate	0.11	--
Adult Recreational User	Surface Water	Ingestion	4.2E-09	--	--	--	0.0002	--
		Dermal Contact	2.6E-06	--	--	Bis(2-Ethylhexyl)phthalate	0.11	--
		Total	2.6E-06	--	--	Bis(2-Ethylhexyl)phthalate	0.11	--
	Shellfish	Ingestion	1.4E-06	--	--	cPAHs	0.07	--
		Total All Media	4.0E-06	--	--		0.18	--
Child Resident	Surface Water	Ingestion	9.9E-08	--	--	--	0.004	--
		Dermal Contact	4.3E-06	--	--	Bis(2-Ethylhexyl)phthalate	0.17	--
		Total	4.3E-06	--	--	Bis(2-Ethylhexyl)phthalate	0.18	--
	Groundwater	Ingestion	1.2E-05	--	--	--	2.7	Iron ⁽¹⁾
		Dermal Contact	5.0E-08	--	--	--	0.05	--
		Inhalation	9.7E-08	--	--	Bis(2-Ethylhexyl)phthalate	0.02	--
		Total	1.3E-05	--	--	Bis(2-Ethylhexyl)phthalate	2.8	Iron ⁽¹⁾
	Total All Media	1.7E-05	--	--		3.0	--	
Adult Resident	Surface Water	Ingestion	1.7E-08	--	--	--	0.0002	--
		Dermal Contact	1.0E-05	--	Bis(2-Ethylhexyl)phthalate	--	0.11	--
		Total	1.0E-05	--	Bis(2-Ethylhexyl)phthalate	--	0.11	--
	Groundwater	Ingestion	2.1E-05	--	Arsenic	--	1.2	--
		Dermal Contact	1.2E-07	--	--	--	0.03	--
		Inhalation	1.7E-07	--	--	--	0.01	--
		Total	2.2E-05	--	Arsenic	--	1.2	--
	Total All Media	3.2E-05	--	--		1.3	--	
Lifelong Resident	Surface Water	Ingestion	1.2E-07	--	--	--	NA	--
		Dermal Contact	1.4E-05	--	Bis(2-Ethylhexyl)phthalate	--	NA	--
		Total	1.4E-05	--	Bis(2-Ethylhexyl)phthalate	--	NA	--
	Groundwater	Ingestion	3.4E-05	--	Arsenic	--	NA	--
		Dermal Contact	1.7E-07	--	--	--	NA	--
		Inhalation	2.6E-07	--	--	--	NA	--
		Total	3.4E-05	--	Arsenic	--	NA	--
	Total All Media	4.9E-05	--	--		NA	--	

Note: Shading indicates an exceedance of the U.S. EPA target risk range (1.0E-04 to 1.0E-06) for cancer risks, or the acceptable limit of 1.0 for hazard indices.

1 Iron hazardous index is based on nutrition requirements for adults, and therefore does not apply to children.

pesticide was retained as a COPC in surface water at Site 2. At Site 15, one PCB was retained as a COPC in surface soil and one SVOC and several metals were retained as COPCs in sediment.

The next level of evaluation in the ecological risk assessment is a comparison of the data to “no observed adverse effects levels” (NOAELs). The NOAELs represent dosages to higher level ecological receptors (e.g., shrew, heron, raccoon) for which adverse impacts are not normally anticipated. For each receptor, a hazard quotient (HQ) is calculated based on a receptor’s intake of a chemical through consumption of contaminated food and sediment, surface water, and soil. A hazard quotient of less than 1.0 indicates that adverse effects for that receptor would not be expected.

Table 2 summarizes the ecological risks calculated for Sites 2 and 15.

Site 2

The food chain modeling for Site 2 terrestrial and aquatic receptors found that, under the most conservative assumptions, aluminum, iron, and vanadium result in hazard quotients greater than 1.0 for one or more receptors. However, the maximum concentrations for each of the three metals in sediment were less than

background values, indicating that these metals are not site-related contamination. Conditions at Site 2 are considered to be protective of the environment and do not warrant further investigation or a remedial action from an ecological risk standpoint.

Site 15

The food chain modeling for Site 15 terrestrial receptors found that, under the most conservative assumptions, Aroclor-1254 in surface soil results in a hazard quotient of 1.0 for the shrew. Hazard quotients for the other terrestrial receptors under this scenario did not exceed 1.0 indicating that adverse effects would not be expected. These conservative assumptions assume that the shrew is exposed to the maximum concentration for its whole life. Under a more realistic scenario that is based on mean chemical concentrations, adverse risks to terrestrial receptors are not expected.

The food chain modeling for Site 15 aquatic receptors (Elliot’s Beach) found that under the most conservative assumptions, aluminum, iron, and vanadium in sediment result in hazard quotients greater than 1.0 for at least one receptor. However, the maximum concentrations of these metals in sediment were less than background values, indicating that these detected metals are not site-related contamination.

TABLE 2
SUMMARY OF ECOLOGICAL RISKS
SITE 2 – BORROW PIT LANDFILL
SITE 15 – DIRT ROADS
MCRD PARRIS ISLAND, SOUTH CAROLINA

Receptor	Exposure Route	Risk Estimates – Site 2	Risk Estimates – Site 15
Terrestrial and Aquatic Plants, Soil Invertebrates, Benthic Receptors	Direct contact with sediment, prey, surface water, and soil; ingestion of sediment, prey, surface water, soil, and food; and uptake by plants	U.S. EPA Region 4 Screening Levels; HQs for surface water (max = 4.04), sediment (max = 0.34), surface soil (max = 85.80) and groundwater (max = 11.61)	U.S. EPA Region IV Screening Levels; HQs for sediment (max = 1.54) and surface soil (max = 1.2)
Aquatic Food Chain Receptors – Maximum Concentrations - Raccoon - Heron - Mummichog - Red Drum - Osprey	Direct contact with sediment and surface water; ingestion of sediment, prey, and surface water	Food Chain Modeling, Maximum HQs: 23.1 ⁽¹⁾ 9.70 NA NA 11.3	Food Chain Modeling, Maximum HQs: 63.1 ⁽¹⁾ 26.4 ⁽¹⁾ NA NA 30.9 ⁽¹⁾
Terrestrial Food Chain Receptors – Maximum Concentrations - Shrew - Robin - Hawk - Mouse - Fox - Woodcock	Direct contact with sediment, surface water, and soil; ingestion of sediment, prey, surface water, soil, and food	Food Chain Modeling, Maximum HQs: 2.77 ⁽¹⁾ 2.41 1.12 12.8 7.32 4.57	Food Chain Modeling, Maximum HQs: 1.00 0.256 0.168 0.0135 0.425 0.545

NA – NOAELs not available.

1 Does not include aluminum

Based on this information, conditions at Site 15 are considered to be protective of the environment and do not warrant further investigation or a remedial action.

Proposed Plan

It is the Navy's current judgment that no action is required at Sites 2 and 15 to protect public health or welfare and the environment. The Proposed Plan for Sites 2 and 15 is No Action/No Further Action, which includes no further environmental investigation or remediation. Because site conditions are protective of human health and the environment, it was not necessary to develop and evaluate remedial action objectives or remedial alternatives at Sites 2 and 15.

Next Steps

By October 30, 2000, the Partnering Team expects to have reviewed all public comments and issued a Record of Decision (ROD). The ROD addresses all public comments and includes a summary of comment responses. The ROD will then be made available to the public in the information repository at the Beaufort County Public Library Headquarters. The MCRD will also announce the Navy's decision through the local news media and the community mailing list. To be included on the community mailing list, please use the attached form.

Community Participation

What's a Formal Comment?



Formal comments are used to improve the Proposed Plan. To make a formal comment, you need to present your views during the public meeting or submit a written comment during the 45-day comment period. The public meeting will be held on August 24, 2000 at the Technical College of the Low Country, 921 Ribaut Road, Beaufort, South Carolina 29902 starting at 6:30 P.M. Written comments should be sent to:

Commanding General
Marine Corps Recruit Depot
Attn: Timothy J. Harrington, NREAO
P.O. Box 19003
Parris Island, SC 29905-9003
Tel: 843-228-3423

E-mail comments by September 25, 2000 to

email: harringtontj@mcrdpi.usmc.mil



The MCRD Parris Island and Navy will review the transcript of all comments received at the public meeting and all written comments received during the formal comment period before making a final decision. They will then prepare a written response to all comments. The transcript of comments and the MCRD Parris Island and Navy's written responses will then be issued in a document called the Community Responsiveness Summary in the ROD.

For More Detailed Information

To help the public understand and comment on the proposal for the site, this document summarizes a number of reports and studies. The technical and public information publications prepared to date for Sites 2 and 15 are available at the following information repository:

Beaufort County Public Library Headquarters
311 Scott Street
Beaufort, South Carolina 29902



**Marine Corps Recruit Depot, Parris Island
Site/SWMU 2 and Site/SWMU 15
Public Comment Sheet**

**Use this space to write your comments
or to be included on the mailing list:**

The MCRD Parris Island and the Navy want your written comments on the option under consideration for Sites 2 and 15. You can use the form below to send written comments. If you have questions about how to comment, please call Tim Harrington at (843) 228-3423. This form is provided for your convenience. Please mail this form or additional sheets of written comments, postmarked no later than September 25, 2000, to

Commanding General
Marine Corps Recruit Depot
Attn: Timothy J. Harrington, NREAO
P.O. Box 19003
Parris Island, SC 29905-9003

Tel: 843-228-3423

E-mail comments by September 25, 2000 to
email: harringtontj@mcrdpi.usmc.mil

(Attach sheets as needed)

Comment submitted by: _____

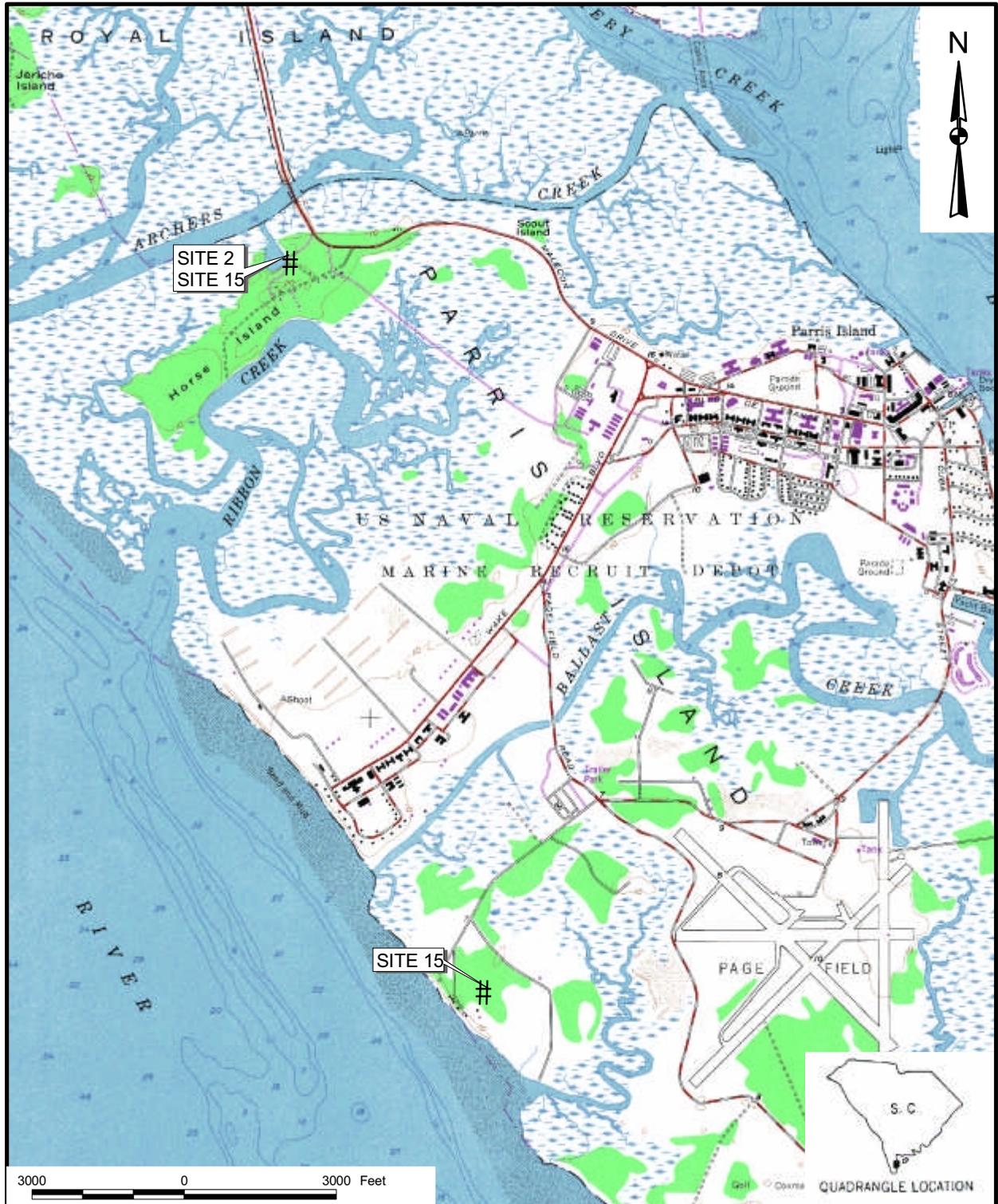
Mailing list additions, deletions, or changes

If you did not receive this through the mail or would like to

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|---|----------------|
| <input type="checkbox"/> be added to the site mailing list | Name: _____ |
| <input type="checkbox"/> note a change of address | Address: _____ |
| <input type="checkbox"/> be deleted from the mailing list | _____ |
| <input type="checkbox"/> obtain additional information
concerning the Restoration Advisory Board | _____ |

please check the appropriate box and fill in the correct address information above.

SOURCE: USGS 7.5 MINUTE PARRIS ISLAND QUADRANGLE, 1956. PHOTOREVISED 1979.



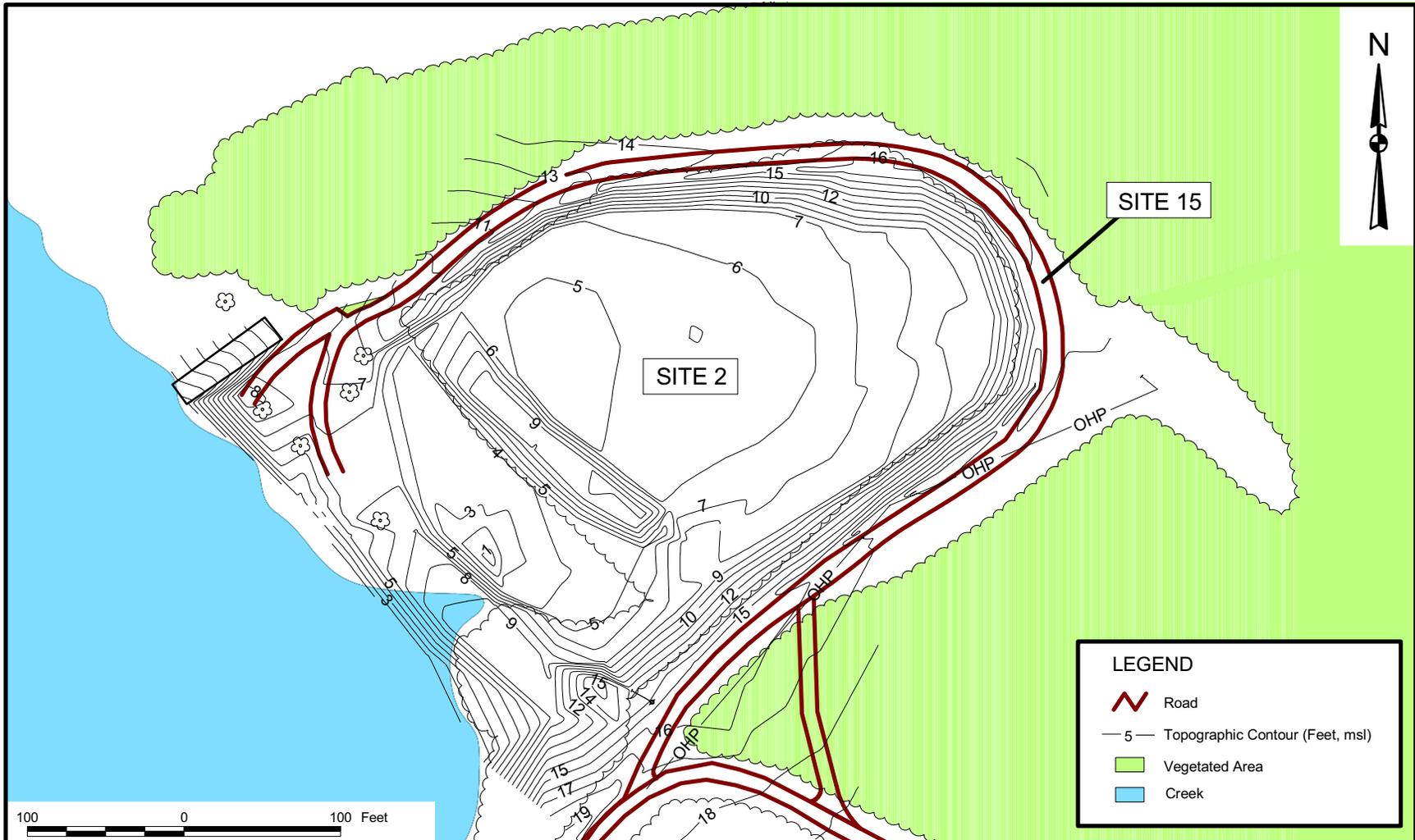
DRAWN BY T. BECKMAN	DATE 7/11/00
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COST/SCHEDULE-AREA	
SCALE AS NOTED	



DEPOT LOCATION MAP
MCRD PARRIS ISLAND, SOUTH CAROLINA

CONTRACT NUMBER 7394	
APPROVED BY	DATE
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DRAWING NO. FIGURE 1	REV 0

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LEGEND

-  Road
-  5 — Topographic Contour (Feet, msl)
-  Vegetated Area
-  Creek



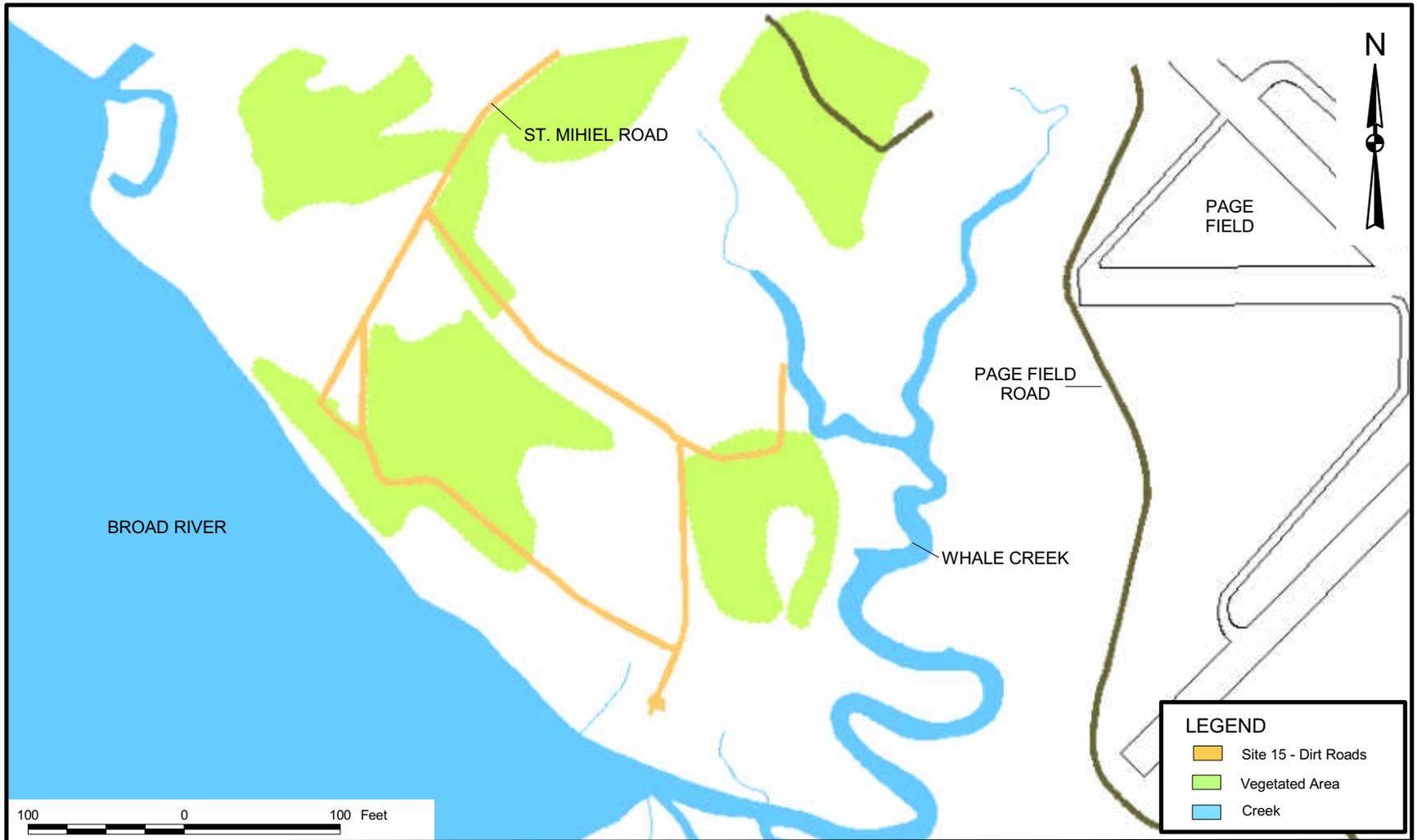
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SITE 2 - BORROW PIT LANDFILL
AND
SITE 15 - DIRT ROADS
MCRD PARRIS ISLAND, SOUTH CAROLINA

CONTRACT NUMBER 7394	
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LEGEND

- Site 15 - Dirt Roads
- Vegetated Area
- Creek



DRAWN BY T. BECKMAN	DATE 7/11/00
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COST/SCHEDULE-AREA	
SCALE AS NOTED	



SITE 15 - DIRT ROADS
MCRD PARRIS ISLAND, SOUTH CAROLINA

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